REMARKS/ARGUMENTS

These remarks are submitted in response to the Office Action of July 22, 2004 (Office Action). As this response is timely filed within the 3-month shortened statutory period, no fee is believed due.

As an initial matter, Applicant wishes to thank the Examiner for her thorough examination of the present application. Independent Claims 1, 7, 13, 18, 23, 25, and 32 have been amended to clarify the invention. Dependent Claims 2, 4, and 26 have been amended to ensure consistency with each of the other claims. The amendments are fully supported by the specification. No new matter has been added by virtue of the amendments made herein.

In paragraphs 1-2 of the Office Action, the Examiner has rejected claims 1-3, 7, 9, 13, 14, 17-19, 22-29, and 31-35 under 35 U.S.C. §102(b) as being anticipated by Epstein, *et al.*, "Statistical NLU using Hidden Clumpings" (Epstein). In paragraph 3 of the Office Action, the Examiner has rejected claims 1-5, 7-10, 12-15, 17-20 and 22-35 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,442,522 to Carberry, *et al.* (Carberry). In paragraphs 4-5, the Examiner has rejected claims 6, 11, 16, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Carberry. With respect to the Examiner's rejection under 35 U.S.C. § 103(a), Applicant respectfully notes that at the time of the invention, Carberry was assigned to International Business Machines Corporation (IBM) of Armonk, New York. Accordingly, under 35 U.S.C § 103(c), Carberry can not be used as a reference for rejection under 35 U.S.C. § 103(a) because it is subject matter that was co-owned or assigned to the same person as the present invention at the time the present invention was made.

It may be helpful to briefly review Applicant's invention prior to addressing the rejections on the art under 35 U.S.C. §102. The invention is directed to methods and systems by which computing devices are able to understand and extract information from

human written or spoken language. The methods and systems utilize statistical NLU models that are embedded or included within a statistical parser, a maximum entropy parser, or a direct channel model. The methods and systems taught herein can begin by applying a statistical natural language understanding (NLU) model to text input for identifying substrings within the text input. The statistical NLU model can be selected for identifying a particular class of substring. The method can include examining the identified substrings using an inventory of queries or features corresponding to the selected statistical NLU model. Additionally, the inventory of queries can be based upon a hierarchy or be given weights determined during training of an NLU system.

Epstein fails to disclose, either expressly or inherently, each of the features recited in independent Claims 1, 7, 13, 18, 23, 25, and 32, as amended, and described in Applicant's specification. For example, Epstein does not teach or suggest using one or more statistical models included within or embedded in another framework such as a statistical parser, maximum entropy parser, or source channel understanding model as explicitly described in Applicant's specification at p. 6, lines 2-10, and at p. 13, lines 2-19, and as further illustrated by the plurality of embedded statistical NLU models in FIG. 2.

Epstein provides two translation models – one being a generalization of the other – for natural language understanding based upon a source-channel paradigm. (Epstein, p. 176.) The more specific model is comparable to one used for machine translation. It aligns English word elements with formal language elements based upon an alignment algorithm. (Epstein, p. 177.) The second, more general model, similarly uses the alignment algorithm, the particular alignment being one that aligns partitioned substrings of an English language sentence with a "tuple of clumps" based upon a formal language model. The parameters of the algorithm are conditional probability distributions. The

probabilistic conditioning of Epstein, in turn, is based upon the length of sub-phrases, nearby words, and particular meaning of the words with which the phrase aligns.

Epstein nowhere teaches or suggests, however, using one or more statistical models included within or embedded in another statistical framework. Instead, as described in the previous paragraph, conditioning is based upon sub-phrase length, word juxtaposition, and the like. There is no probabilistic conditioning in Epstein based on the likelihood of a constituent element being found. Epstein lacks any suggestion regarding a statistical model included within or embedded in another framework. It follows, therefore, that Epstein fails to teach or suggest using one or more statistical models included within or embedded in a statistical parser, a maximum entropy parser, or a source channel model as recited in independent Claims 1, 7, 13, 18, 23, 25, and 32, as amended. (See, e.g., Applicant's Specification, p. 6, lines 2-10; p. 13, lines 2-19; see, also, FIG. 2.)

Carberry similarly fails to disclose each of the features taught by Applicants invention. For example, Carberry neither expressly nor inherently discloses the inclusion or embedding of a statistical NLU model within a framework such as a statistical parser, maximum entropy parser, or source channel model. Carberry is directed to a system and method for servicing natural language request in the context of a plurality of remote hosts. (See Col. 4, lines 4-43.) Carberry alludes to the use of a statistical model for statistical parsing. (Col. 5, lines 19-35.) Yet Carberry only describes this use in terms of processing input text associated with a computerized reservation system (CRS). Accordingly, Carberry only provides an example of an application that uses statistical processing. Nowhere does Carberry even hint at using a statistical parser or other framework that includes or in which is embedded a statistical NLU model as expressly taught by Applicant's invention and recited in each of independent Claims 1, 7, 13, 18,

23, 25, and 32, as amended. (Applicant's Specification, p. 6, lines 2-10; p. 13, lines 2-19; FIG. 2.)

Applicant respectfully submits that because neither Epstein nor Carberry teach or suggest each of the features of Applicant's invention recited in independent Claims 1, 7, 13, 18, 23, 25, and 32, as amended, the prior art fails to provide a basis for their rejection under 35 U.S.C. §102. Moreover, given that the remaining claims recite yet additional features, Epstein and Carberry similarly fail to provide a basis for their rejection under 35 U.S.C. §102. Accordingly, Applicant respectfully requests that the rejections be withdrawn.

Applicant believes that this application is now in full condition for allowance, which action is respectfully requested. Applicant requests that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Date: 10/21/04

Gregory A. Nelson, Registration No. 30,577
Richard A. Hinson, Registration No. 47,652
Brian K. Buchheit, Registration No. 52,667
AKERMAN SENTERFITT
Customer No. 40987
Post Office Box 3188
West Palm Beach, FL 33402-3188
Telephone: (561) 653-5000